Base Year: 1999 By: T. Dinh

SOURCE INVENTORY

CATEGORIES # 108 - 110, 112, 115, 116

PRINTING: GRAVURE, FLEXOGRAPHIC, LETTERPRESS, LITHOGRAPHIC, SILKSCREEN AND SMALL IN-HOUSE PRINTING

1999 EMISSIONS

Introduction

Emissions reported in these categories are from emissions due to printing operations in the Bay Area. The types of printing operations from which emissions are reported include:

1. Gravure Printing (Cat # 108) – a type of printing operation whereby ink is transferred from a plated minute etched well to a substrate that is supported by an impression roller. Ink excess is removed by a doctor blade;
2. Flexographic Printing (Cat # 109) – a printing operation that utilizes a "rolling technique" to apply words, designs, and/or pictures to the substrate. The image carrier is made of either a rubber elastomer or a similarly related elastometric material;
3. Letterpress Printing (Cat # 110) - a printing operation whereby ink is transferred to the paper via an image surface. The image area is raised relative to the non-image area;
4. Lithographic Printing (Cat # 112) – a printing operation whereby printing of the image and non-image areas are carried out on the same plane;
5. Screen Printing (Cat # 115) – a printing operation whereby printing ink passes to a web or a fabric from which a refined form of stencil is applied;
6. Small In-House Printing (Cat # 116) - this category is comprised of various small in-house printing operations. The small printing operations include printing operations that use intaglio, ink jet, and xerographic prints.

Methodologies

Emissions from large printing facilities in the Bay Area are regulated under the District's permit system called "point sources". Under this system, throughput data of permitted ink printing facilities is tracked and recorded in the District's Data Bank system. The stored data along with emission factors derived from publication sources and/or through actual field tests provide the information used to calculate emissions.

Emissions from small, unpermitted printing facilities are estimated based on data gathered through the U. S. Department of Commerce's publication titled, "Census of

Manufacturer, Miscellaneous Chemical Products". A growth factor based on U. S. shipment of paper production and population data of the Bay Area population was used to estimate the total unpermitted printing source emissions. Adjustments were also made to account for additional emissions from fountain solution, preparation, and cleanup. The sum of the calculated emissions from permitted facilities and the unpermitted facilities provides an overall emission value for all Bay Area printing sources captured in this category.

1999 Estimated Ink Usage for Printing Categories (Area Sources):

Cat #	Description	Thousand Pounds Ink
112	Lithographic	1,776
115	Silkscreen	369
116	Small In-House Printing	302

Emission factors used in emission estimates were based on a combination of factors, including estimated ink solvent content, laboratory analyses, and data bank information.

Monthly Variation

The quarterly seasonal percent throughput data from reported companies was used to estimate the monthly variation in an area.

County Distribution

County location of each company as reported in the Data Bank was used to distribute emissions for each county.

TRENDS

History

Historical emissions were estimated based on ARB's Manufacturing-Printing growth profile.

Growth

Projections to year 2030 were based on a modified growth profile of ARB's Manufacturing, Printing industry in the Bay Area.

Control

District Regulation 8, Rule 20 was adopted in 1980, amended in 1984, 1985, 1989, 1993, 1995, 1997, and 1999. The Rule requires low solvent usage on inks and coatings, volatile organic compound limits of products and fountain solution and/or requirements on approved emission control system, and compliance schedules. Further regulatory control on the amount of solvent on the fountain solution and screen products requirements by 2003 should result in reduced emissions for most of these categories.